

GIRL IN OVERALLS IS HANDING HUN THE HOOK

Women Cheerfully Getting Ready to Fill Shoes of Men Drafted From Automobile Factories or Garages

The American woman is not yet fully awake to the fact that the automobile industry offers her a source of lucrative employment as well as a chance to display her patriotism in releasing a man for the front.

She has been content to run her car. She hasn't wanted to understand it. What need had she for knowing the difference between bevel gears and spiral gears, or cam shafts and carburetors, when letting out the clutch and pushing a few buttons would start her, and showing in the clutch and pushing a few more buttons would stop her? And when anything went wrong what were garages and chauffeurs for?

Uncle Sam has decided that chauffeurs are just as good for drafting, if not better, than other men are. And that, according to Howard Gross, is the thing that is going to wake the women up.

Mr. Gross is the instructor in the mechanical and electrical automobile course at the Spring Garden Institute, that establishment has a class for women pupils who are not content to run their cars without knowing the why and wherefore.

The majority of them are women whose chauffeurs have either been called to the colors or because of their knowledge of mechanics have been drafted for employment in war industries at a wage double that paid to chauffeurs. One of the women students is a doctor with a penchant for operating on mechanical as well as human beings. And several others are frank in their avowal that they hope to put their knowledge to commercial use when their course is completed.

"There is no reason, however," Mr. Gross said, "why every woman who owns a car should not know as much about it as the mechanic to whom she has to take it every time something goes wrong. Women will never succeed in the automobile business until they do know about their cars. They can't be successful chauffeurs or drivers of trucks with a mere superficial knowledge, nor can they be successful salesmen without a knowledge of the component parts and their functions."

In the first class for women in this city, instructed by Mr. Gross and organized more than a year ago, Miss Letitia McKim and Miss Sophie Norris, of the motor messenger service, learned to administer first aid to cars that seemed to be gasping for their very lives. Because of their determination in mastering the technicalities of a motor's engine, because they learned how to take a car entirely apart and reassemble it again, these young women are now efficient drivers in France, doing real work, seeing real sights and experiencing first-hand thrills. Miss Hannah Hobart and Miss Margaret Henderson, of Bryn Mawr College, followed their example, and now the former, who is a nurse somewhere at the front, is of additional value because of her equipment, and the latter has also been accepted for messenger service as a driver of the "buses."

Many of the most efficient auto sales-

WE'RE PROUD OF THEM! AND SO IS THE NATION!

Continued from Page 1
 ary, through ice and snow, never once women and their cars were at the disposal of one member "given in," and they keep busy on an average twenty cars each day.

Some work, that! and I do not think we can praise them enough. Poor Eugenia Cassatt, who has driven a Dodge car, had it stolen just recently, but they have not given up hope of finding it. Ann Simpson, who with her seven-passenger Cadillac had traveled fourteen miles on the ice on Monday, the seventh, that fierce day, came in to report while I talked with Mrs. Wright. She is certainly smart-looking.



MRS. ARTHUR PEW
 First Lieutenant of the Motor messenger service of the Emergency Aid.

they are: an officer was sent here from Washington who had never been here before. He had many addresses among his orders. Washington notified headquarters of the Motor Messenger Service here, a member and her car met the officer on his arrival and took him wherever he wanted to go and then back to the station for another train, and he accomplished in a half day what would usually have taken him two or three.

WASHINGTON speaks of them as most efficient, and, believe me, they are! And they sacrifice things with a capital S. While I was there one Messenger, who had been hard at it all day, asked if the Adjutant thought it would make any difference if she changed her next day from Tuesday to Wednesday that week, as she had several important personal things to attend to. "I think you had better stop in in the morning and see," said the Adjutant. "We'll probably be very busy tomorrow." "Then I won't change," said the other. "I'll make my affairs wait," and without a word off she went to report.

AND these women all have families and homes to run, and they don't neglect them either. There's Mrs. Ridgway Reilly, with her "Paige"; Helen Bell, whose car is a "Scripps Booth," and numerous others. Mrs. Charles Buckwalter, who was dictating the report to Mrs. Reilly that afternoon, and who drives a beauty of a Hudson, was offering to take some of the typewriting home to do in the evening.

Eleanor Baker, whose Buick car may often be seen racing through the streets is another ardent worker; and Edna Champion, whose car, a "Haw 32," was outside when I came in, had been busy at it all day.

THEY offered their services to the visiting officers of our allies, and several of the Englishmen who were here, told persons in Washington that the Philadelphia Motor Messenger Service was far better organized than that in England, which has been going since the beginning of the war.

THESE women have established a co-operative bureau, it appears, from Maine to Georgia, with Philadelphia as a headquarters, among girls who are members of the Red Cross and Navy League, and they receive orders from here and work in relays.

THE membership for the time being is limited to about 200 and each applicant had to fill out a long blank and answer questions and give two names as reference before she was considered and accepted.

The organization consists of a captain, Mrs. Thomas Elwyn; an adjutant, Mrs. Henry Price Wright; a quartermaster, Mrs. Wain Morgan Churchman; a first lieutenant, Mrs. Arthur Pew; and divisional lieutenants, who include Mrs. George Dallas Dixon, Jr. (Philadelphia), Miss Helen Dougherty (Germantown), Mrs. Florence Rivinus (Chestnut Hill), Mrs. Sydney Thayer (Main Line), Miss Madeline Asbury (York Road) and Miss Mary McIntyre (Delaware County).

JUST think of it, they are to have an ambulance of their own to receive the wounded when they come and deliver them to the nearest base hospital. In fact, the service seems to take in every single thing that women who run cars could possibly do. And let me tell you Washington appreciates them.

The best of it all is they are absolutely independent; they work for all organizations, not for any one, and they do it. My hat to them. My hat to you. My hat to show you how efficient

ON JANUARY 8 the Motor Messengers had a wonderful meeting at the Bellevue and the captain was surprised by the presentation of the colors by Colonel Rolfe, U. S. A., in the presence of Brigadier General L. T. L. Waller, U. S. M. C., and various others.

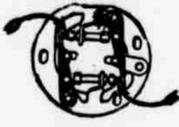
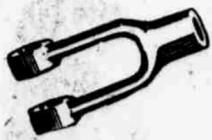
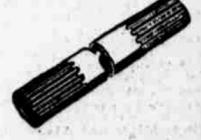
Don't make a mistake, as I did, and think these women can't have much to do yet, as the war is "over there." There's more than a plenty for them to do here. And they do it. My hat is off to them. NANCY WINNE.

Finishing Touches

A Few of the Finely Wrought Details



of the Eight-Cylinder Cadillac Car

 <p>The Rocker Arm Finishing touches often constitute the difference between a good painting and a masterpiece. Finishing touches throughout the Cadillac make it a World Standard. For example, the little forged Arms in the valve system are used, not because they are absolutely essential to the operation of the car, but because they reduce friction and resulting wear, and are a factor of quietness.</p>	 <p>The Needle If the Needle sticks—the car stops. To insure the free movement of this Needle in the carburetor inlet valve, the Cadillac supplements thorough machine operations by "tumbling" each Needle, first in sand, then in lampblack and water, thus removing any microscopic unevenness. The point is afterwards ground to unusual accuracy. The fine-grained "meteor metal" lends itself to a very high polish.</p>	 <p>The Valve Valve grinding is often thought of as a periodical duty, like having your shoes tapped. The material and workmanship of Cadillac Valves give long life, with surprisingly little attention. Head and stem are forged in a single piece, with a high percentage of tungsten, which resists warping and pitting. The dimensions are held true to limits of hair-like fineness.</p>	 <p>The Cam Slide Insert the Cadillac Cam Slide (or valve push rod) in its bushing, with no oil on either part. Hold your thumb over the bushing's open end, and try to let the Slide drop out. It will take approximately ten seconds for enough air to enter between the Slide and the walls of the bushing for gravity to pull the Slide its full length. This is a Cadillac vacuum fit. Quietness and long life are attained.</p>	 <p>The Guide An extra inch for the years to come has been built into the Guides, in which operate the Cadillac valves. Friction between the valves and their Guides is distributed over four and one-half inches of bearing length, while less would meet requirements. The bore of each Guide is held to the one one-thousandth part of an inch, making an accurate fit with the valve stem.</p>
 <p>The Points Reliability doubled equals peace of mind. Two sets of contact points were introduced by Cadillac and are used in the Cadillac ignition system. They give long, dependable service without attention. Each set, made of tungsten, is complete in itself, but the use of two greatly adds to the life of each. They share the current, and automatically "keep in step."</p>	 <p>The Bearing Precious stones which bear the pinions of a fine watch are chosen to standards no more exacting than Cadillac Bearings. The Bearings with which the Cadillac engine is jeweled are made entirely in Cadillac shops. The special bearing metal and the heavy bronze back are inseparably bonded by threading the bronze before the bearing metal is poured. "Water grinding" gives the Bearings their nice finish.</p>	 <p>The Shaft Eleven diameters in as many three key operations—dimensions held to limits as fine as the five ten-thousandths part of an inch (.0005)—with these characteristics the Shaft for the fan is a symbol of Cadillac workmanship upon parts which are relatively unknown and unappreciated by the average user.</p>	 <p>The Dowel Pin Up to standard after years of service is the usual thing in Cadillac cars. The cylinder blocks and various cover plates are accurately positioned by Dowel Pins, for all time. In the event that one of these parts is removed, after long, hard service, the mechanic, when replacing it, cannot vary a hair's breadth from rigid Cadillac standards of assembly.</p>	 <p>The Piston Pin Eighty times per second is the approximate number of times a piston stops and starts at high speed in a motor car engine. If the Pin which joins piston and connecting rod is not very accurately fitted it will become a source of noise. The three ten-thousandths part of an inch is the maximum variation allowed in the diameter of the case-hardened Cadillac Pins.</p>
 <p>The Rivet Most Rivets come out of a keg. The steel Rivets on the Cadillac clutch are special Cadillac Rivets. The Cadillac Company manufactures more than a million of them a year to exacting specifications. Each Rivet is held to the limits of a hair's thickness and must pass the vernier calipers of the inspector.</p>	 <p>The Bolt Just a Bolt, but up to Cadillac specifications. Every Bolt and Nut is tested on a thread gauge to make sure that they fit each other properly, and will not work loose, even after years of severe usage. The dimensions of the threads are held to the limits as fine as the finest hair. No Cadillac part is too small or seemingly insignificant to receive minute accuracy.</p>	 <p>The Worm A sturdy piece of metal, beautifully tooled, is the Worm of the Cadillac steering gear. It is of better material than necessary to meet actual requirements, longer than "necessary," of greater diameter than "necessary," and finer workmanship than "necessary." It symbolizes Cadillac policy of leaving nothing to the element of chance.</p>	 <p>The Sector A motorist must depend upon his car to answer the wheel. One of the reasons for the reliability of Cadillac steering is the sturdiness of the steering Sector. Tooled from a single forging of nickel steel, the Sector can never become loose from its shaft. The shaft has the unusual dimension of one and three eighths inches, and five inches of bearing length.</p>	 <p>The Steering Arm As a link between the driver and the road the Steering Arm must be a piece of metal to swear by. A small knob is forged on Cadillac Arms, then removed and examined by men who have an eye for fine metals. This extraordinary precaution is a test for the required silky texture of the nickel steel, and a check on the heat treatment.</p>
 <p>The Yoke There is an obscure little part in a motor car known as the Yoke. It is such a small detail of the brake rod connections that it is seemingly of not much consequence. For safety's sake, the little Yoke in the Cadillac is a fine steel forging. It is machined to limits of a hair's thickness, so that it will fit nicely, do its work quietly, and the user will not even know it is there.</p>	 <p>The Brake Pin Stopping on a grade is hardly safe unless every detail of the braking system is thoroughly dependable. The Cadillac has taken what might be considered unnecessary precautions. For example, a small Pin in the brake rod connections. The heat treatment of this Pin insures long life and safety. This unusual care upon so-called "rough parts" is typically Cadillac.</p>	 <p>The Gear All of the power plant drive is transmitted to the rear wheels through the pinion Gear in the axle. Accurate machine work, for which Cadillac has established a World Standard, makes the Gear quiet. Fine material, a nickel steel forging of the most tenacious quality, insures continued quietness after long, hard years of service.</p>	 <p>The Bushing A nice fit between the Bushings and the shackle bolts of the springs is one of the reasons why a Cadillac passes quietly over rough roads. The bore of these hard phosphor bronze Bushings is not allowed to vary in excess of the one one-thousandth part of an inch. They entail some extra time and cost, but are a factor of quietness, and add to the life of the car.</p>	 <p>The Spline The grip of many steel teeth or Splines keeps the Cadillac frame strong and rigid, and relieves the body of strains which would otherwise be transmitted to it. The ends of the tubular cross members are epined and forced into the forged sidebar brackets under great pressure, a unique Cadillac construction. Each Spline helps to reduce weaving on rough roads.</p>

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